

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,197,433 B2
APPLICATION NO. : 10/820786
DATED : March 27, 2007
INVENTOR(S) : Chandrakant D. Patel et al.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

$$SHI = \frac{T_{\text{rackinlet}} - T_{\text{ref}}}{T_{\text{rackoutlet}} - T_{\text{ref}}}$$

In column 9, lines 3-4, in Equation 3, delete “

$$SHI = \frac{\bar{T}_{\text{rackinlet}} - T_{\text{ref}}}{\bar{T}_{\text{rackoutlet}} - T_{\text{ref}}}$$

--, therefor.

In column 11, line 7, delete “524c” and insert -- 254c --, therefor.

In column 12, line 50, delete “40 C” and insert -- 40° C --, therefor.

In column 12, line 51, delete “20 C” and insert -- 20° C --, therefor.

In column 12, line 52, delete “10 C” and insert -- 10° C --, therefor.

In column 12, line 55, delete “50 C” and insert -- 50° C --, therefor.

In column 12, line 55, delete “30 C” and insert -- 30° C --, therefor.

In column 13, line 2, delete “30 C” and insert -- 30° C --, therefor.

In column 13, lines 2-3, delete “15 C” and insert -- 15° C --, therefor.

In column 13, line 57, after “set” insert -- point. However, if the RH levels are below the predetermined set point, the CRAC unit 114 may attempt to humidify the cooling fluid delivered to the components 122. In this situation, because the humidification process also requires additional power consumption by the CRAC unit 114, the modified COP will, therefore, be affected by the humidification process as well. The modified COP may thus be used in place of the COP described hereinabove with respect to the determination of the energy efficiency coefficient (χ). In addition, the co-allocator 224 may select the data center 252a-252c having the highest energy efficiency coefficient (χ) based upon the modified COP to perform the requested application 258.

According to another example, a penalty factor may be included in the determination of the energy efficiency coefficients (χ) of the data centers 252a-252c. The penalty factor may substantially be based upon the RH levels around the data centers 252a-252c. Thus, for instance, if the RH level is higher than a predetermined setpoint, a dehumidifier of a CRAC unit 114 may be in operation. If the dehumidifier is in operation, a penalty factor may be included in the determination of the COP for that data center 252a-252c. By way of example, the co-allocator 224 may decide to withdraw any data centers 252a-252c from

consideration in determining whether to allocate the application in that data center 252a-252c, if the penalty factor is detected.

Alternatively, the penalty factor may be assigned according to the level of dehumidifier (or humidifier) operation in the data center 252a-252c. Thus, for instance, values may be assigned to various levels of dehumidifier (or humidifier) activity, which may correlate to the penalty factors of the data centers 252a-252c having dehumidifiers that are operating. In this example, a larger penalty factor may be assigned to those data centers 252a-252c having higher levels of dehumidifier or humidifier activity. The penalty factors may, for instance, be subtracted from or otherwise reduce the COP of the data centers 252a-252c for which the dehumidifiers are operating. In addition, the levels to which the COPs are reduced may be based upon the dehumidification (or humidification) levels. In this regard, the energy efficiency coefficients (χ) of the data centers 252a-252c having the reduced levels of COP will be lower than for those data centers 252a-252c having COPs which are not reduced due to dehumidification (or humidification) operations. --.

In column 15, lines 17-62, delete “is point. However, if the RH levels are below the predetermined set reduced due to dehumidification (or humidification) operations. configured” and insert -- is configured --, therefor.

In column 18, line 3, delete “154c” and insert -- 254c --, therefor.

In column 18, line 5, delete “HP addresses” and insert -- IP addresses --, therefor.

In column 20, line 67, delete “WPL” and insert -- WPI --, therefor.

In column 22, line 50, in Claim 1, delete “efficient” and insert -- efficiency --, therefor.

In column 22, line 61, in Claim 4, after “occurring” insert -- in --.

In column 22, line 63, in Claim 4, delete “beat” and insert -- heat --, therefor.

In column 23, line 3, in Claim 6, delete “arid” and insert -- and --, therefor.

In column 24, line 34, in Claim 19, delete “the” before “workload”.

In column 24, line 46, in Claim 20, delete “(GRAMS)” and insert -- (GRAMs) --, therefor.

In column 25, line 22, in Claim 25, delete “coefficient” and insert -- coefficients --, therefor.

In column 25, line 25, in Claim 25, delete “,” before “based”.

In column 26, line 10, in Claim 29, after “information” insert -- , --.

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In column 26, lines 20-21, in Claim 30, after "information" insert --, --.

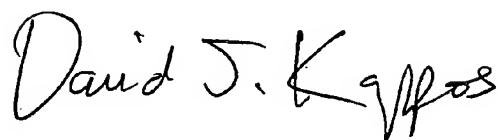
In column 26, line 31, in Claim 31, after "centers" insert --, --.

In column 27, line 32, in Claim 35, delete "the for" and insert -- the means for --, therefor.

In column 27, line 55, in Claim 38, delete "center" and insert -- centers --, therefor.

Signed and Sealed this

Ninth Day of February, 2010



David J. Kappos
Director of the United States Patent and Trademark Office